

Claims

- [c1] An apparatus comprising:
 - a first connector to connect a first tubing section and a second tubing section together; and
 - a member adapted to be moved from a retracted position to an extended position to form a sealed connection between a first tubular member that is connected to the first tubing section and a second tubular member that is connected to the second tubing section.
- [c2] The apparatus of claim 1, wherein the first tubing section comprises a first production tubing section and the second tubing section comprises a second production tubing section.
- [c3] The apparatus of claim 1, wherein the first tubing section comprises a first injection tubing section and the second tubing section comprises a second injection tubing section.
- [c4] The apparatus of claim 1, wherein the member comprises a sleeve adapted to move between the retracted position and the extended position.

- [c5] The apparatus of claim 4, wherein the sleeve is adapted to slide between the retracted position and the extended position.
- [c6] The apparatus of claim 4, wherein the sleeve comprises threads adapted to move from the retracted position to the extended position in response to the sleeve being rotated.
- [c7] The apparatus of claim 4, further comprising:
 - first body attached to the first tubing section and being mounted to the sleeve, and
 - a second body separate from the first body and being mounted to the second tubing section.
- [c8] The apparatus of claim 7, wherein the first body comprises a first passageway and the second body comprises a second passageway to establish communication through the apparatus between the first tubular member and the second tubular member.
- [c9] The apparatus of claim 8, wherein the sleeve is adapted to bridge a gap between the first body and the second body to seal the first and second passageways.
- [c10] The apparatus of claim 9, wherein the sleeve is adapted to extend into the gap, the sleeve comprising an opening to permit communication between the first and second

passageways.

- [c11] The apparatus of claim 9, wherein the sleeve is adapted to extend into the gap, the sleeve comprising an opening to permit communication between the first and second passageways.
- [c12] The apparatus of claim 11, wherein the second body comprises a tapered opening to receive the first tubing section.
- [c13] The apparatus of claim 7, wherein the sleeve is adapted to bridge a gap between the first body and the second body, the apparatus further comprising:
a sealing element located between the sleeve and the first body.
- [c14] The apparatus of claim 7, wherein the sleeve is adapted to bridge a gap between the first body and the second body, the apparatus further comprising:
a sealing element located between the sleeve and the second body.
- [c15] The apparatus of claim 14, wherein the sealing element is located on an exterior surface of the second body and circumscribes a longitudinal axis of the second body.
- [c16] The apparatus of claim 14, wherein the sealing element

is located on an exterior surface of an annular face of the second body.

- [c17] The apparatus of claim 7, wherein the first body comprises a passageway to establish communication through the first body between the first tubular member and the second tubular member, and the sleeve is adapted to form a seal between a wall of the passageway and the sleeve.
- [c18] The apparatus of claim 1, wherein the member comprises a sleeve adapted to closely circumscribe the first tubular member and move between the retracted position and the extended position.
- [c19] The apparatus of claim 18, further comprising:
 - first body attached to the first tubing section and being mounted to the sleeve, and
 - a second body separate from the first body and being mounted to the second tubing section.
- [c20] The apparatus of claim 19, wherein the sleeve is mounted to the first body and is adapted to stab into a second connector mounted to the second body.
- [c21] The apparatus of claim 1, wherein the first connector comprises at least one stab type connector to receive one of the first and second tubing sections.

- [c22] The apparatus of claim 1, wherein the member is eccentric with respect to the first tubing section.
- [c23] The apparatus of claim 1, wherein the member is concentric with respect to the first tubing section.
- [c24] An apparatus comprising:
 - a first connector to form a connection between a first tubing section and a second tubing section and leave a gap between a first end of a first tubular member that is connected to the first tubing section and a second end of a second tubular member that is connected to the second tubing section; and
 - a member inserted into the gap to seal the first tubular member and the second tubular member together.
- [c25] The apparatus of claim 24, wherein the first tubing section comprises a first production tubing section and the second tubing section comprises a second production tubing section.
- [c26] The apparatus of claim 24, wherein the member comprises a wedge.
- [c27] The apparatus of claim 24, wherein the first tubing section comprises a first injection tubing section and the second tubing section comprises a second injection tub-

ing section.

- [c28] The apparatus of claim 24, wherein the member comprises at least one shim.
- [c29] The apparatus of claim 24, wherein the member comprises multiple shims.
- [c30] An apparatus comprising:
 - a pin end including a first passageway in communication with a first tubular member and a second passageway in communication with a first tubing section; and
 - a box end adapted to receive the pin end, the box end including a third passageway in communication with a second tubular member and a fourth passageway in communication with a second tubing section,
 - wherein the pin and box ends are adapted to form a snap fit connection in response to the pin end being received by the box end.
- [c31] The apparatus of claim 30, wherein the first tubing section comprises a first production tubing section and the second tubing section comprises a second production tubing section.
- [c32] The apparatus of claim 30, further comprising:
 - sealing sleeve, wherein the box end is adapted to receive the sealing sleeve.

[c33] An apparatus comprising:
a pin end including a first passageway in communication with a first tubular member and a second passageway in communication with a first tubing section;
a box end adapted to receive the pin end, the box end including a third passageway in communication with a second tubular member and a fourth passageway in communication with a second tubing section; and
wherein the pin and box ends collectively form a recess adapted to receive a member after the box end receives the pin end.

[c34] The apparatus of claim 33, wherein the first tubing section comprises a first production tubing section and the second tubing section comprises a second production tubing section.

[c35] The apparatus of claim 33, wherein the member comprises an I-shaped member.

[c36] The apparatus of claim 33, wherein the member comprises a dog.

[c37] The apparatus of claim 33, further comprising:
a mechanism to force the dog radially inwardly into the recess.

[c38] An apparatus comprising:
a pin end including a first passageway in communication with a first tubular member and a second passageway in communication with a first tubing section;
a box end adapted to receive the pin end, the box end including a third passageway in communication with a second tubular member and a fourth passageway in communication with a second tubing section;
a sleeve adapted to slide at least partially over the pin end and the box end to secure the pin end and box end together.

[c39] The apparatus of claim 38, wherein the first tubing section comprises a first production tubing section and the second tubing section comprises a second production tubing section.

[c40] The apparatus of claim 38, wherein the sleeve comprises threads, and
the sleeve is adapted to be rotated to connect the pin end and the box end together.

[c41] The apparatus of claim 38, further comprising:
a pin extending between the box end and the pin end to sustain a torsion force.

[c42] An apparatus comprising:

a pin end including a first passageway in communication with a first tubular member and a second passageway in communication with a first tubing section;
a box end adapted to receive the pin end, the box end including a third passageway in communication with a second tubular member and a fourth passageway in communication with a second tubing section; and
a locking mechanism to secure the pin end and the box end together.

- [c43] The apparatus of claim 42, wherein the first tubing section comprises a first production tubing section and the second tubing section comprises a second production tubing section.
- [c44] The apparatus of claim 42, wherein the locking mechanism comprises a ratchet mechanism.
- [c45] The apparatus of claim 44, wherein the locking mechanism comprises a sleeve comprising first ratchet teeth, and the pin end comprises second ratchet teeth to engage the first ratchet teeth.
- [c46] The apparatus of claim 44, wherein the engagement of the first and second teeth restricts movement of the pin end to a single direction.

- [c47] The apparatus of claim 42, further comprising:
 - a tube connecting the third passageway and the fourth passageway.
- [c48] The apparatus of claim 47, wherein the tube is adapted to slide in at least one of the third passageway and the fourth passageway in response to the insertion of the pin end into the box end.
- [c49] The apparatus of claim 47, further comprising:
 - a first seal between the tube and the third passageway;
 - and
 - a second seal between the tube and the fourth passageway.
- [c50] A method comprising:
 - connecting a first tubing section to a second production tubing section; and
 - moving a member from a retracted position to an extended position to form a sealed connection between a first tubular member that is connected to the first tubing section and a second tubular member that is connected to the second tubing section.
- [c51] The apparatus of claim 50, wherein the first tubing section comprises a first production tubing section and the second tubing section comprises a second production

tubing section.

- [c52] The method of claim 50, wherein the moving comprises: moving a sleeve between the retracted position and the extended position.
- [c53] The method of claim 52, wherein the moving comprises: sliding the sleeve between the retracted position and the extended position.
- [c54] The method of claim 52, wherein the moving comprises: rotating the sleeve to engage threads to move the sleeve from the retracted position to the extended position.
- [c55] The method of claim 52, further comprising: attaching a first body to the first tubing section; mounting the sleeve to the first body; and attaching a second body separate from the first body to the second tubing.
- [c56] The method of claim 55, further comprising: providing a first passageway in the first body; and providing a second passageway in the second body, wherein the first tubular member and the second tubular member communicate through the first and second passageways.
- [c57] The method of claim 56, further comprising:

using the sleeve to bridge a gap between the first body and the second body to seal the first and second passageways.

- [c58] The method of claim 57, further comprising:
 - extending the sleeve is adapted to extend into the gap; and
 - using an opening in the sleeve to permit communication between the first and second passageways.
- [c59] The method of claim 55, further comprising:
 - receiving an end of the first tubing in the first body; and
 - receiving an end of the second tubing section in the first body.
- [c60] The method of claim 59, further comprising:
 - providing a tapered opening in the second body to receive the first tubing section.
- [c61] The method of claim 55, further comprising:
 - using the sleeve to bridge a gap between the first body and the second body; and
 - providing a sealing element between the sleeve and the first body.
- [c62] The method of claim 55, further comprising:
 - using the sleeve to bridge a gap between the first body and the second body; and

providing a sealing element between the sleeve and the second body.

- [c63] The method of claim 62, wherein the sealing element is located on an exterior surface of the second body and circumscribes a longitudinal axis of the second body.
- [c64] The method of claim 62, wherein the sealing element is located on an exterior surface of an annular face of the second body.
- [c65] The method of claim 55, further comprising:
providing a passageway in the first body to establish communication through the first body between the first tubular member and the second tubular member; and forming a seal between a wall of the passageway and the sleeve.
- [c66] The method of claim 50, wherein the moving comprises:
moving a sleeve that closely circumscribes the first tubular member between the retracted position and the extended position.
- [c67] The method of claim 66, further comprising:
attaching a first body to the first tubing section;
mounting the sleeve to the first body; and
attaching a second body separate from the first body to the second tubing section.

- [c68] The method of claim 67, further comprising:
stabbing the sleeve into a second connector mounted to
the second body.
- [c69] The method of claim 50, wherein the first connector
comprises at least one stab type connector to receive
one of the first and second tubing sections.
- [c70] The method of claim 50, wherein the member is eccen-
tric with respect to the first tubing section.
- [c71] The method of claim 50, wherein the member is concen-
tric with respect to the first tubing section.
- [c72] A method comprising:
forming a connection between a first tubing section and
a second tubing section;
in response to the connection, leaving a gap between a
first end of a first tubular member that is connected to
the first tubing section and a second end of a second
tubular member that is connected to the second tubing;
and
inserting a member into the gap to seal the first tubular
member and the second tubular member together.
- [c73] The method of claim 72, wherein the first tubing section
comprises a first production tubing section and the sec-

ond tubing section comprises a second production tubing section.

- [c74] The method of claim 72, wherein the member comprises a wedge.
- [c75] The method of claim 72, wherein the member comprises at least one shim.
- [c76] The method of claim 72, wherein the member comprises multiple shims.
- [c77] A method comprising:
 - providing a pin end comprising a first passageway in communication with a first tubular member and a second passageway in communication with a first tubing section;
 - providing a box end adapted to receive the pin end, the box end comprising a third passageway in communication with a second tubular member and a fourth passageway in communication with a second tubing section;
 - and
 - forming a snap fit connection between the pin end and the box end in response to the pin end being received by the box end.
- [c78] The method of claim 77, wherein the first tubing section comprises a first production tubing section and the second tubing section comprises a second production tub-

ing section.

- [c79] The method of claim 70, further comprising:
providing a sealing sleeve to seal a junction between the pin end and the box end.
- [c80] A method comprising:
providing a pin end including a first passageway in communication with a first tubular member and a second passageway in communication with a first tubing section;
providing a box end adapted to receive the pin end, the box end including a third passageway in communication with a second tubular member and a fourth passageway in communication with a second tubing section; and
forming a recess to receive a member to lock the box end to the pin end after the box end receives the pin end.
- [c81] The method of claim 80, wherein the first tubing section comprises a first production tubing section and the second tubing section comprises a second production tubing section.
- [c82] The method of claim 80, wherein the member comprises an I-shaped member.
- [c83] The method of claim 80, wherein the member comprises a dog.

- [c84] The method of claim 82, further comprising:
turning a screw to force the dog radially inwardly into
the recess.
- [c85] A method comprising:
providing a pin end including a first passageway in com-
munication with a first tubular member and a second
passageway in communication with a first tubing section;
providing a box end adapted to receive the pin end, the
box end including a third passageway in communication
with a second tubular member and a fourth passageway
in communication with a second tubing section; and
sliding a sleeve at least partially over the pin end and the
box end to secure the pin end and the box end together.
- [c86] The method of claim 85, wherein the first tubing section
comprises a first production tubing section and the sec-
ond tubing section comprises a second production tub-
ing section.
- [c87] The method of claim 85, wherein at least one of the pin
end and the box end comprises threads, the method fur-
ther comprising:
rotating the sleeve to engage the threads to connect the
pin end and the box end together.
- [c88] The method of claim 86, further comprising:

inserting a pin between the box end and the pin end to sustain a torsion force.

- [c89] A method comprising:
 - providing a pin end including a first passageway in communication with a first tubular member and a second passageway in communication with a first tubing section;
 - providing a box end adapted to receive the pin end, the box end including a third passageway in communication with a second tubular member and a fourth passageway in communication with a second tubing section; and
 - using a locking mechanism to secure the pin end and box end together.
- [c90] The method of claim 89, wherein the first tubing section comprises a first production tubing section and the second tubing section comprises a second production tubing section.
- [c91] The method of claim 89, wherein the using comprise using a ratchet mechanism.
- [c92] The method of claim 90, wherein the using the ratchet mechanism comprises:
 - providing a sleeve comprising first ratchet teeth;
 - providing second ratchet teeth on the pin end to engage the first ratchet teeth.

- [c93] The method of claim 92, wherein the engagement of the first and second teeth restricts movement of the pin end to a single direction.
- [c94] The method of claim 89, further comprising:
providing a tube connecting the third passageway and the fourth passageway.
- [c95] The method of claim 94, wherein the tube is adapted to slide in at least one of the third passageway and the fourth passageway in response to the insertion of the pin end into the box end.
- [c96] The method of claim 94, further comprising:
sealing the tube to the third passageway; and
sealing the tube to the fourth passageway.